

The Hong Kong University of Science and Technology

Department of Mathematics

Seminar on Pure Mathematics

An introduction to combinatorial *q*-fractal dimensions for a subset sum function

By

Mr. Shoichi KAMADA Department of Applied Mathematics, Kumamoto University, Japan

<u>Abstract</u>

The subset sum problem, which is NP-hard, can be replaced by finding an inverse image of a subset sum function. Many of cryptosystems based on the subset sum problem have been broken since the hardness of this problem depends mainly on its density.

In this talk, we introduce the notion of a combinatorial q-fractal dimension for a subset sum function. This notion is a combinatorial analogue of the generalized dimension in multi-fractal analysis and includes the density of the subset sum problem. We give a lower bound for a combinatorial q-fractal dimension. The method is combinatorial rather than algebraic.

Date: Monday, 25 February 2019

Time: 4:00p.m. - 4:50p.m.

Venue: Room 3472, Academic Building (near Lifts 25-26), HKUST

All are welcome!